



# New Jersey Source Water Assessment News

Summer 2001

New Jersey Source Water Assessment News is a publication of the New Jersey Department of Environmental Protection, Bureau of Safe Drinking Water.

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## Source Water Assessment Program Overview

In 1996, amendments were made to the Federal Safe Drinking Water Act requiring all states to establish a Source Water Assessment Program (SWAP) for all public water systems. A public water system is defined as "a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals."

The purpose of the SWAP is to provide for the protection and benefit of public water systems and to increase public awareness and involvement in protecting these sources. In addition, the SWAP will allow the State to determine if current monitoring should be revised based on individual assessments.

The New Jersey Department of Environmental Protection (NJDEP) Source Water Assessment Plan can be found at [www.state.nj.us/dep/watersupply/swap.htm](http://www.state.nj.us/dep/watersupply/swap.htm). The plan incorporates the following steps:

1. Delineate the source water assessment area of each ground and surface water source of public drinking water.
2. Inventory the potential contamination sources within

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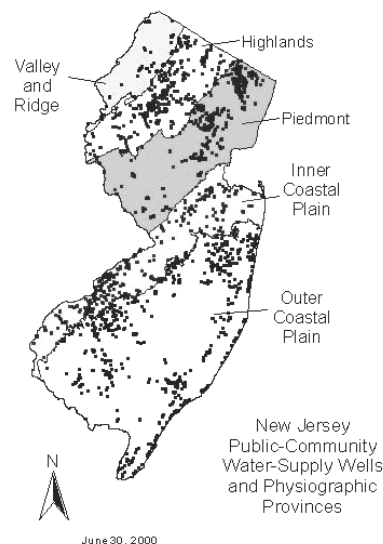
the source water assessment area.

3. Determine the public water system's susceptibility to regulated contaminants.
4. Incorporate public participation and education.

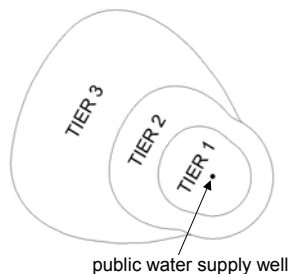
NJDEP anticipates the Source Water Assessments for New Jersey will be completed by May 2003.

## FAST NJ FACTS:

- New Jersey is 7,419 square miles
- New Jersey's population is over eight million.
- New Jersey has 21 counties
- Currently, New Jersey has 4,243 public water systems. (Source: Safe Drinking Water Act Violations 1999)
- 606 of the public water systems are community water systems serving water to a residential population such as towns, mobile home parks, and subdivisions. (Source: Safe Drinking Water Act Violations 1999)
- 935 of the public water systems are nontransient noncommunity water systems, such as schools, hospitals, and factories. (Source: Safe Drinking Water Act Violations 1999)
- The remaining 2,702 public water systems are transient noncommunity water systems, such as parks, highway rest stops, restaurants, and motels. (Source: Safe Drinking Water Act Violations 1999)



## Source Water Assessment



### STEP 1: Delineate Source Water Assessment Area

A source water assessment area is the area from which water flows to the well within a twelve-year period, for groundwater sources. For surface water sources, the source water assessment area is the area upstream of a surface water intake. A source water assessment area will be determined for all sources serving public water systems in New Jersey.

#### Ground Water

NJDEP is performing ground water source delineations using the Combined Model/CFR Method for all public community water systems (CWS). Public non-community water systems (NCWS) are being delineated using the Calculated Fixed Radius (CFR) method.

NJDEP may also decide to perform an advanced delineation if adequate data exists and program time constraints allow. An appropriate method will be selected based on three factors: type of well, hydrogeologic setting, and available data. The advanced delineation methods that may be applied are:

1. Non-CFR Model Method
2. 3-D Model Method

Descriptions of the above methods are in the "Guidelines for Delineation of Well Head Protection Areas in New Jersey" available at web address: [www.state.nj.us/dep/dsr/whpadel.pdf](http://www.state.nj.us/dep/dsr/whpadel.pdf).

For each ground water source, three tiers are calculated and labeled as Tier 1, a 2 year time of travel; Tier 2, a 5 year time of travel; and Tier 3, a 12 year time of travel. Within these tiers, all contaminated sites are identified to assist in determining the water source's susceptibility to contamination. In general, the Combined Model/CFR Method is used for the CWS and the CFR Method is used for the NCWS.

NJDEP has completed delineating the CWS ground water sources in 16 counties. Another five are in the process of being drafted. We anticipate the ground water source assessment delineations for the remaining community water systems in Bergen and Sussex counties will be completed by July 2001.

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NJDEP with the assistance of counties and others, has located 50 percent of the non-community water systems using Global Positioning System (GPS) methods. Delineations of NCWS are expected by the year 2002.

#### Surface Water Intakes

NJDEP has identified 59 surface water intakes throughout the State. The source water assessment area contains the entire drainage area that flows past the intake. These delineations include the headwaters and tributaries using the USGS hydrologic code HUC 14. In addition, the source water assessment areas for surface water intakes include a five-year ground water buffer. For more information concerning the surface water assessment areas, see the SWAP Plan.

Thirteen of the 59 surface water assessment areas have been delineated. NJDEP anticipates these delineations will be complete by July 2002.

### STEP 2: Inventory Potential Contaminant Sources

The New Jersey SWAP Plan lists potential contamination sources. (See below) The two main focuses of the contaminant inventory are land use, representing non-point sources, and point sources. Sources related to land use include salting and runoff from roads, application of pesticides and herbicides to recreational areas and farmland, storage facilities, and landfills. Point sources include contaminated sites, leaking underground storage tanks, and New Jersey Pollution Discharge Elimination Systems (NJPDES) discharges.

The following is a list of site activities and conditions that may be considered as potential contaminants:

- Agriculture
- Animal feedlots/animal boarding facilities
- Bulk chemical storage
- Combined sewer overflow
- Compost facilities
- Contaminated soils
- Discharges to ground and surface water
- Erosion
- Industrial commercial point sources
- Infiltration lagoons and spray irrigation sites
- Interstate pollution sources
- Junkyards and landfills
- Known contaminated sites
- Land application of sludge
- Leaking sewer lines
- Military base
- Mining operations
- Naturally occurring contaminants
- Nonagricultural pesticide application
- Radioactive sites

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- Recreational activities (golf courses, soccer fields, etc.)
- Runoff
- Salt water intrusion
- Septic system
- Surface impoundments
- Leaking underground storage tanks
- Wastewater treatment plants

NJDEP is identifying and collecting information pertaining to the above list of potential contaminant sources. The information collected will be inventoried and presented on the source water assessment area diagrams.



### STEP 3: Determining Susceptibility of Public Water Sources

NJDEP has contracted with the US Geological Survey (USGS) to provide susceptibility assessments for groundwater wells and surface water intakes for the following eight contaminant categories:

- Pathogens
- Nutrients
- Volatile Organic Compounds (VOCs)
- Pesticides
- Synthetic Organic Compounds (SOCs)
- Inorganics
- Radionuclides
- Disinfection Byproduct Precursors (DBPs)

To determine a water source's susceptibility, NJDEP and USGS are jointly taking the following steps:

- Determining the amount of available data
- Determining presence and absence of contaminants greater than detection limits
- Developing a database to display important well and intake information

## Source Water Assessment Models

*How are the models being created and how will they be used?*

NJDEP and USGS are in the process of developing susceptibility models for each of the eight-contaminant categories listed above. Different models are being developed for ground water and surface water.

Models are being developed to determine a water source's susceptibility based on its location, use, and amount and type of potential contaminants within its tiers. The models will be created using a selected set of

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## American Water Resources Association Conference

### "Making the Connection between Source Water, Drinking Water, and Public Health"

On May 10<sup>th</sup> and 11<sup>th</sup>, the American Water Resources Association (AWRA) held their Mid-Atlantic Regional Annual Conference in Matamoras, Pennsylvania. The conference was titled "Making the Connection between Source Water, Drinking Water, and Public Health".

Representatives from New Jersey, Pennsylvania and New York presented updates on the progress of their Source Water Assessment Program. Each State's source water assessment is unique. Important issues were also discussed such as when a source water assessment area crosses state boundaries.

In addition, a water purveyor representative from each State presented information on how they are taking steps to protect water quality and assist in the Source Water Assessment Program.

New Jersey's water purveyor representative was from the New Jersey American Water Company. New Jersey American Water Company, which serves over a million people in New Jersey, is taking important steps to protect surface and ground water sources. One such step is creation of a database that lists the network of users and potential contaminants in the area of their sources of supply.

New Jersey American Water Company has also established a Source Water Protection surveillance program. The surveillance program is made up of volunteers trained to oversee their local watersheds. The volunteers inspect the local watersheds on a weekly basis and collect samples. The volunteer group and the surveillance program have been recognized with awards from the Environmental Protection Agency.

### Source Water Assessment Program

SWAP Coordinator: Sandra Krietzman.  
 Program Management and Technical Support: Karen Fell (Supervisor), Pat Bono, Judy Louis, Linda Walsh, and Kristin Zams.  
 GIS: Ed Apalinski and Gail Carter.  
 Delineations: Steve Johnson, Steve Spayd, Bill Mennel, and Ted Pallis.  
 Model Development: Debra Buxton, Jessica Hopple, Eric Vowinkel, and Robert Nicholson.

public water system wells and public water system surface water intakes located throughout the State.

The validity of the models will be tested using additional public water systems. Once the models are determined to be accurate, the models will then be applied to determine susceptibility for each community and non-community public water system water source. NJDEP and USGS anticipate that the models will be completed and validated by the summer of 2002.

The assessment for each source allows us to determine which water sources are more likely to be contaminated and/or most likely to become contaminated. The use of models permits the source water assessment to be used as a device to assist in the protection and management of a water source.

NJDEP will be developing a way to display the SWAP data in the upcoming year. NJDEP anticipates that the source water assessments will be completed by May 2003, in accordance with the SWAP Plan approval.

### What Will SWAP Do?

- Inform the public about their drinking water.
- Assist communities in making decisions about the protection of their water supply.
- Protect public water systems.
- Direct additional water studies.
- Assist in source water management.
- Provide information for watershed assessment and planning.
- Assist in monitoring public water providers.
- Identify specific contaminants in the area of the water source and assist in contamination prevention.
- Improve land use planning.

### For More Information

For more information and/or to receive a copy of the Source Water Assessment Plan please call (609) 292-5550 or go to our website at [www.state.nj.us/dep/watersupply/swap.htm](http://www.state.nj.us/dep/watersupply/swap.htm).

Interested in getting involved or know someone who might? For more information on how to become involved please contact Kristin Zams at [kzams@dep.nj.state.us](mailto:kzams@dep.nj.state.us) or (609) 633-2298.

The New Jersey Source Water Protection Newsletter is a publication of the New Jersey Department of Environmental Protection's Bureau of Safe Drinking Water. Its purpose is to provide the public with current information on the Source Water Assessment Plan.

Comments, questions, and suggestions are welcome and can be sent to: Kristin Zams, NJDEP, Bureau of Safe Drinking Water, 401 East State Street, PO Box 426, Trenton, NJ 08625-0426.

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## Source Water Assessment Advisory Committee Meeting

The 1996 Amendments to the Federal Safe Drinking Water Act placed a strong emphasis on public participation and outreach. To ensure public participation in the State's Source Water Assessment Plan, NJDEP created a Source Water Assessment Advisory Committee (SWAAC).

During the drafting of the Source Water Assessment Plan, numerous individuals expressed interest in the Advisory Committee. After the plan was approved, NJDEP held a SWAAC meeting in November 1999. Twenty-nine people (thirteen of which were either USGS or NJDEP employees) attended the meeting.

As a result of the November meeting's limited attendance, in February 2000, NJDEP mailed a questionnaire to the Source Water Assessment Advisory Committee members requesting their anticipated level of participation. Out of the two hundred and eleven who received the mailing, only thirty-two responded that they would like to continue participating in the committee. An additional seventeen people responded that they only wanted to be on the mailing list.

On June 13, 2001, NJDEP held a Source Water Assessment Advisory Committee meeting at the New Jersey Environmental Infrastructure Trust Building in Lawrenceville. Forty-two of the 60 invited attended the meeting. The purpose of the meeting was to update the SWAAC on the status of the Source Water Assessments. Topics discussed included:

- Status of Ground Water Delineations
- Surface Water Delineations
- Potential Contaminant Source Inventory
- Status of Susceptibility Analysis
- Public Participation Aspects

The NJDEP believes it is important to provide the public with updated information on the Source Water Assessment Plan. NJDEP is eager to inform the public and would like to increase the public's participation in the committee. If you are interested in attending SWAAC meetings and/or would like to receive mailings please contact Kristin Zams at [kzams@dep.state.nj.us](mailto:kzams@dep.state.nj.us) or (609) 633-2298.



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